



STM8T143 device limitations

Silicon identification

This errata sheet applies to revision 1 and 2 of the STMicroelectronics STM8T143 devices.

See [Table 1: Device identification](#) to identify the device revision on the ordering sales type. The sales type is also printed on the delivery box label. To identify the device revision on the device marking, see [Appendix A: Revision code on device marking](#).

Table 1. Device identification

Rev no.	Part no. SO8 package	Part no. UFDFPN8 package	Marking SO8 package ⁽¹⁾	Marking UFDFPN8 package ⁽¹⁾
1	STM8T143AM61T	STM8T143AU61T	8T143A61	T143
2	STM8T143AM62T	STM8T143AU62T	T143AM62	1432

1. See [Appendix A: Revision code on device marking](#).

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1 Product evolution

Table 2 gives a summary of all the documented limitations of STM8T143 devices.

Legend for *Table 2*: A = workaround available; N = no workaround available; P = partial workaround available, '-' = fixed, F = fix planned, ES = values from this errata sheet, DS = datasheet parameter (datasheet rev 3 and higher).

Table 2. Product evolution summary

Section	Limitation	STM8T143 silicon limitation status	
		Rev 1	Rev 2
Section 2: Silicon limitations	<i>Section 2.1: Low power modes option bits</i>	A	-
	<i>Section 2.2: Release threshold ratio option bit</i>	NF	-
	<i>Section 2.3: Output type option bit</i>	PF	-
	<i>Section 2.4: Debounce</i>	ES	DS
	<i>Section 2.5: Gain target value</i>	PF	-
	<i>Section 2.6: Touch freeze threshold (TFTh)</i>	NF	-
	<i>Section 2.7: Fast touch</i>	NF	-
	<i>Section 2.8: Touch thresholds</i>	ES	DS
	<i>Section 2.9: End of touch threshold</i>	NF	-
	<i>Section 2.10: Proximity thresholds</i>	ES	DS
	<i>Section 2.11: Reference freeze timeout</i>	A	-
	<i>Section 2.12: Data streaming frame</i>	NF	-
	<i>Section 2.13: AET HALT period (tAET_HALT)</i>	NF	-

2 Silicon limitations

2.1 Low power modes option bits

Description

Revision 1 silicon features Normal power mode only.

Workaround

The CTRL pin can be used to halt the device and control device power consumption. When the CTRL pin is released, a new calibration is performed. This limitation is fixed in revision 2.

2.2 Release threshold ratio option bit

Description

Only a 75% release threshold ratio is available.

Workaround

No workaround is available. This limitation is fixed in revision 2.

2.3 Output type option bit

Description

Only proximity output is available in Control mode.

Workaround

If touch only is needed, Dual mode can be used. There is no workaround available if both touch and CTRL input are needed. This limitation is fixed in revision 2.

2.4 Debounce

Description

The proximity and touch detection debounce count (DDC) and the proximity and touch end of detection debounce count (EDDC) of revision 1 silicon are different from the values given in the datasheet (see [Table 3](#) below and see Table 15 in the datasheet).

Table 3. DDC and EDCC capacitive sensing sensing characteristics

Symbol	Parameter	Typical value		Unit
		Revision 1	Revision 2 (datasheet)	
DDC	Detection debounce count (touch)	2	2	t _{SAMPLING}
	Detection debounce count (proximity)	4	6	
EDDC	End of detection debounce count (touch)	2	2	
	End of detection debounce count (proximity)	2	3	

Workaround

This limitation is fixed in revision 2.

2.5 Gain target value**Description**

The gain target value is not adjustable. Only gain target value A (200 burst counts) is available.

Workaround

Device sensitivity can be adjusted by using thresholds.

The fix in revision 2 adds additional gain target values and makes them available through option byte selection.

2.6 Touch freeze threshold (T_FTh)**Description**

The touch freeze threshold equals the proximity detection threshold: T_FTh = PTh.

Workaround

No workaround is available. The fix in revision 2 sets the T_FTh value to be independent from the PTh value.

2.7 Fast touch

Description

When a fast touch condition is performed, the device triggers an event on the touch output but, not on the proximity output. This happens when the proximity condition (reference - PTh < burst count < reference - TTh) stands for a period of time less than " $t_{\text{SAMPLING}} \times$ detection debounce time" before entering a touch condition (burst count < reference - TTh). The system recovers and behaves normally after dynamic recalibration at the end of a touch.

Workaround

No workaround is available. When used in dual output mode, proximity output should not be used. The problem is not present in control mode. This limitation is fixed in revision 2.

2.8 Touch thresholds

Table 4. Available touch detection threshold

Symbol	Thresholds available in revision 1	Thresholds available in revision 2
T_{TH}	16	40
	40	60
	60	100
	90	200
	130	340
	200	500
	340	700
	500	900

2.9 End of touch threshold

Description

The touch "end of detection" thresholds are not correctly set.

When a detection threshold value of 360 is selected, the release threshold is 320 instead of 270 (75 % of 360).

When a detection threshold value of 500 is selected, the release threshold is 439 instead of 375 (75 % of 500).

Workaround

No workaround is available. This limitation is fixed in revision 2.

2.10 Proximity thresholds

Table 5. Available touch detection threshold

Symbol	Thresholds available in revision 1	Thresholds available in revision 2
P_{TH}	4	4
	8	8
	12	16
	16	32

2.11 Reference freeze timeout

Description

The problem occurs if a reference freeze timeout, different from infinite, is selected by option byte. When a proximity detection stands longer than the selected timeout, the reference becomes frozen. Recovery happens only when the signal goes below the frozen reference value. In this situation, the device is stuck in detection.

Workaround

Three possible workarounds exist:

1. Use the infinite reference freeze timeout.
2. If the detection duration is shorter than the selected timeout, the problem does not occur.

This limitation is fixed in revision 2.

2.12 Data streaming frame

Description

The ICS2 bit has no influence on the EPCC value. The EPCC capacitance value is always the one where the ICS2 bit is set to 0 (see the EPCC table in the electrical characteristics section of the device datasheet).

Workaround

No workaround is available.

In revision 2, the EPCC value is set according to the ICS2 bit (see the EPCC table in the electrical characteristics section of the device datasheet). This bit is automatically set during the automatic electrode tuning (AET) process.

2.13 AET HALT period ($t_{\text{AET_HALT}}$)

Description

There is no AET frozen period after an 'end of detection'.

After a release condition, when the signal and reference reach the release state value, an AET process is performed if the signal goes below the reference and if the reference value is not in the range 1600 ± 256 .

Workaround

No workaround is available. The fix in revision 2 adds an AET frozen period after an end of detection.

3 STM8T143 programming service option lists

STM8T143 programming service option list rev 1 (last update: Oct 2011)

Customer name:
Address:
Contact name:
Phone number:

Customer settings (tick one box by option)
Output type (used only in CTRL mode – see Section 7.2.2: Control mode) <input type="checkbox"/> Proximity output ⁽¹⁾ <input type="checkbox"/> Touch output
Release threshold ratio <input type="checkbox"/> 75 % ⁽¹⁾
Gain target <input type="checkbox"/> Gain target value A ⁽¹⁾
Data streaming mode (see Section 7.2.4: Data streaming mode) <input type="checkbox"/> Disabled ⁽¹⁾ <input type="checkbox"/> Enabled
Low power mode (see Section 7.2.3: Power modes) <input type="checkbox"/> Normal power mode ⁽¹⁾
Reference freeze timeout (see Section 5.5.4: Reference freeze and reference freeze timeout) <input type="checkbox"/> Infinite reference freeze ⁽¹⁾ <input type="checkbox"/> Reference freeze timeout 1 <input type="checkbox"/> Reference freeze timeout 2 <input type="checkbox"/> Reference freeze timeout 3
t_{DYCAL} <input type="checkbox"/> t_{DYCAL1} ⁽¹⁾ <input type="checkbox"/> t_{DYCAL2}
Dual/Control mode (see Section 7.2.1: Control/Dual output mode) <input type="checkbox"/> Pin 8 in control input ⁽¹⁾ <input type="checkbox"/> Pin 8 in proximity output mode
Touch detection threshold <input type="checkbox"/> Touch detection (T_{th}) threshold value 16 ⁽¹⁾ <input type="checkbox"/> Touch detection (T_{th}) threshold value 40 <input type="checkbox"/> Touch detection (T_{th}) threshold value 60 <input type="checkbox"/> Touch detection (T_{th}) threshold value 90 <input type="checkbox"/> Touch detection (T_{th}) threshold value 130 <input type="checkbox"/> Touch detection (T_{th}) threshold value 200 <input type="checkbox"/> Touch detection (T_{th}) threshold value 340 <input type="checkbox"/> Touch detection (T_{th}) threshold value 500
Proximity detection threshold <input type="checkbox"/> Proximity detection (P_{th}) threshold value 4 ⁽¹⁾ <input type="checkbox"/> Proximity detection (P_{th}) threshold value 8 <input type="checkbox"/> Proximity detection (P_{th}) threshold value 12 <input type="checkbox"/> Proximity detection (P_{th}) threshold value 16
Output polarity (see Section 7.3: Output polarity) ⁽²⁾ <input type="checkbox"/> Active low ⁽¹⁾ <input type="checkbox"/> Active high
Control type (see Section 7.2.2: Control mode) <input type="checkbox"/> Halts conversion control ⁽¹⁾ <input type="checkbox"/> Reference freeze control
Packaging <input type="checkbox"/> Tape and reel <input type="checkbox"/> Tray or tube

Comment : _____
 Date _____ Signature : _____

1. Configuration by default in OTP devices.
2. Effective only when data streaming mode is disabled.

STM8T143 programming service option list rev 2 (last update: Oct 2011)	
Customer name: Address: Contact name: Phone number:	
Customer settings (tick one box by option)	
Output type (used only in CTRL mode – see Section 7.2.2: Control mode) <input type="checkbox"/> Proximity output ⁽¹⁾ <input type="checkbox"/> Touch output	
Release threshold ratio <input type="checkbox"/> 75 % ⁽¹⁾ <input type="checkbox"/> 90 %	
Gain target <input type="checkbox"/> Gain target value A ⁽¹⁾ <input type="checkbox"/> Gain target value B <input type="checkbox"/> Gain target value C <input type="checkbox"/> Gain target value D <input type="checkbox"/> Gain target value E <input type="checkbox"/> Gain target value F <input type="checkbox"/> Gain target value G <input type="checkbox"/> Gain target value H	
Data streaming mode (see Section 7.2.4: Data streaming mode) <input type="checkbox"/> Disabled ⁽¹⁾ <input type="checkbox"/> Enabled	
Low power mode (see Section 7.2.3: Power modes) <input type="checkbox"/> Normal power mode ⁽¹⁾ <input type="checkbox"/> Low power mode 1 <input type="checkbox"/> Low power mode 2 <input type="checkbox"/> Low power mode 3	
Reference freeze timeout (see Section 5.5.4: Reference freeze and reference freeze timeout) <input type="checkbox"/> Infinite reference freeze ⁽¹⁾ <input type="checkbox"/> Reference freeze timeout 1 <input type="checkbox"/> Reference freeze timeout 2 <input type="checkbox"/> Reference freeze timeout 3	
$t_{DYCAL}^{(1)}$ <input type="checkbox"/> $t_{DYCAL1}^{(1)}$ <input type="checkbox"/> $t_{DYCAL2}^{(1)}$	
Dual/Control mode (see Section 7.2.1: Control/Dual output mode) <input type="checkbox"/> Pin 8 in control input ⁽¹⁾ <input type="checkbox"/> Pin 8 in proximity output mode	
Touch detection threshold Touch detection threshold <input type="checkbox"/> Touch detection (T_{TH}) threshold value 40 ⁽¹⁾ <input type="checkbox"/> Touch detection (T_{TH}) threshold value 60 <input type="checkbox"/> Touch detection (T_{TH}) threshold value 100 <input type="checkbox"/> Touch detection (T_{TH}) threshold value 200 <input type="checkbox"/> Touch detection (T_{TH}) threshold value 340 <input type="checkbox"/> Touch detection (T_{TH}) threshold value 500 <input type="checkbox"/> Touch detection (T_{TH}) threshold value 700 <input type="checkbox"/> Touch detection (T_{TH}) threshold value 900	
Proximity detection threshold <input type="checkbox"/> Proximity detection (P_{TH}) threshold value 4 ⁽¹⁾ <input type="checkbox"/> Proximity detection (P_{TH}) threshold value 8 <input type="checkbox"/> Proximity detection (P_{TH}) threshold value 16 <input type="checkbox"/> Proximity detection (P_{TH}) threshold value 32	
Output polarity (see Section 7.3: Output polarity) ⁽²⁾ <input type="checkbox"/> Active low ⁽¹⁾ <input type="checkbox"/> Active high	
Control type (see Section 7.2.2: Control mode) <input type="checkbox"/> Halts conversion control ⁽¹⁾ <input type="checkbox"/> Reference freeze control	
Packaging <input type="checkbox"/> Tape and reel <input type="checkbox"/> Tray or tube	
Comment : Date	Signature :

1. Configuration by default in OTP devices.
2. Effective only when data streaming mode is disabled.

Appendix A: Revision code on device marking

Figure 1 and Figure 2 show the standard marking composition for the UFDFPN8 and S08 packages respectively.

Figure 1. UFDFPN8 package marking

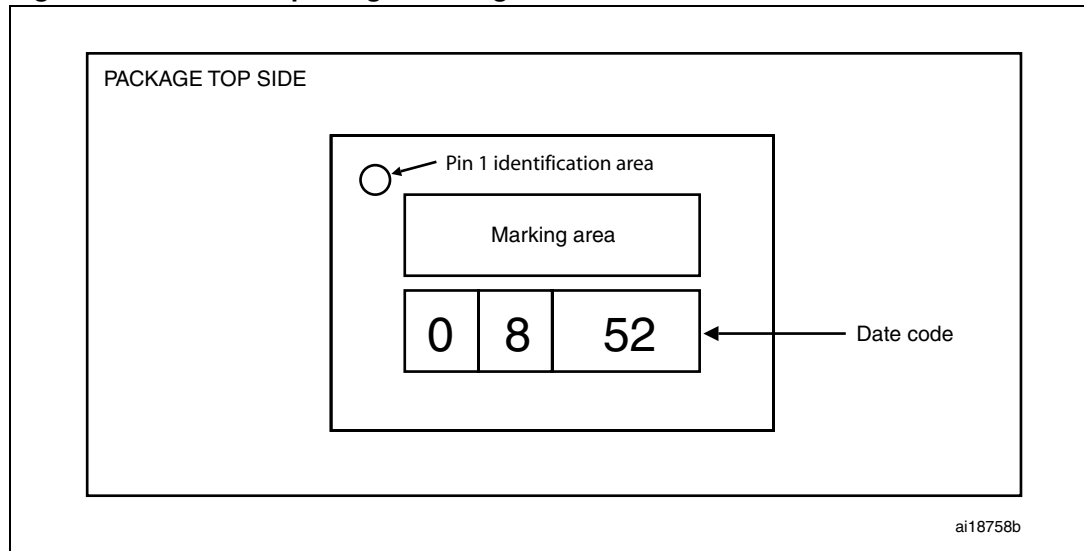
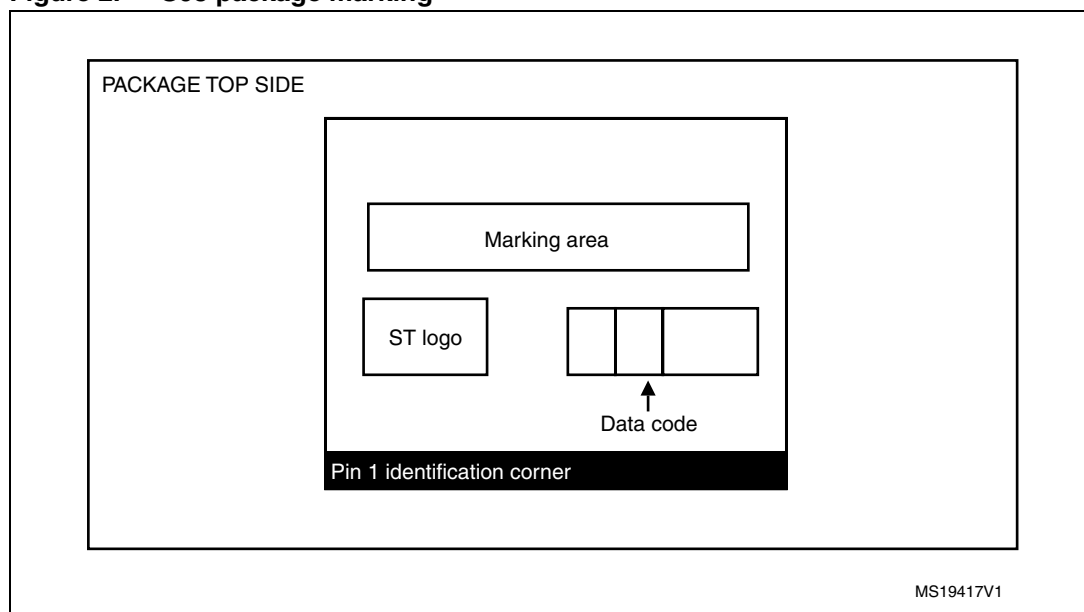


Figure 2. S08 package marking



Revision history

Table 6. Document revision history

Date	Revision	Changes
01-Sep-2011	1	Initial release
18-Oct-2011	2	<p><i>Silicon identification</i>: updated text, updated Table 1: Device identification.</p> <p><i>Table 2: Product evolution summary</i>: updated “Debounce” and “End of touch threshold” information; added “Touch thresholds” and “Proximity thresholds”; added revision 2 information.</p> <p>All “<i>Workaround</i>” sections updated to include revision 2.</p> <p><i>Section 2.1: Low power modes option bits</i>: in the “Description”, replaced “This silicon” with “Revision 1 silicon”.</p> <p><i>Section 2.3: Output type option bit</i>: in the “Description”, replaced “proximity” with “CTRL input”.</p> <p><i>Section 2.4: Debounce</i>: added “revision 1 silicon” in the “Description”; updated Table 3: DDC and EDCC capacitive sensing sensing characteristics.</p> <p><i>Section 2.7: Fast touch</i>: in the “Description” added the proximity and touch conditions and a sentence about system recovery.</p> <p>Added Section 2.8: Touch thresholds.</p> <p>Renamed Section 2.9: End of touch threshold.</p> <p>Added Section 2.10: Proximity thresholds.</p> <p><i>Section 2.11: Reference freeze timeout</i>: updated the “Description”; removed the second bullet point of the “Workaround” and updated the last bullet.</p> <p><i>Section 2.12: Data streaming frame</i>: changed “EPCC multiplier bit” to “EPCC bit 6”.</p> <p>Updated STM8T143 programming service option list and added an option list for both revision 1 and revision 2.</p> <p>Figure 1: UFDFPN8 package marking: updated title and content.</p> <p>Added Figure 2: S08 package marking.</p>
25-Oct-2011	3	<p><i>Table 2: Product evolution summary</i>: abbreviations used for all expressions; legend for abbreviations added.</p> <p><i>Section 2.12: Data streaming frame</i>: updated the “Description”.</p> <p>Figure 1: UFDFPN8 package marking: removed legend for marking.</p> <p>Figure 2: S08 package marking: removed legend for marking.</p>

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